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(54) Title: ACTIVIN RECEPTOR-LIKE KINASES, PROTEINS HAVING SERINE THREONINE KINASE DOMAINS AND THEIR USE

cons.aa	CGGV	AK	E
HTGFBR-II	LDTLVGRGFAEVYKALKQNTSEOFETVAVKIPFYDHYASWQRKDI	PSDINLCHENTLOF	
BACTR-IIB	LLETIKARGRFQGVWQAQLN-----	DFVAVKIKPLQDKSQWQSTEREI	FSTPGQOCHXLLQF
BACTR-II	LLEVKARGRFQGVWQAQLN-----	ETVAVKIPFIQDKSQWQNEYEVYSI	PGQOCHXLLQF
daf-1	LKRVVCSGRFQGVWQAQLN-----	EAVAVKIVNIDEPAPKKEIETI	FETRLRHFWVLYR
subdomains	I	II	III IV
HTGFBR-II	LTAEERKTELCKQYWLITAFHAKGRHLGEYLTRKVISWEDLRNVGSSLRGLSHLSDHTP-C		
BACTR-IIB	IAAEKRGSLNEVELKLTAFHDKGSLIDYLKQNIITWNECHVAETHSRGISTYLHEDVPMCR		
BACTR-II	ICAEKRGTSVDVILKLTAFHDKGSLIDFLKRVVSWNECHIAETHARGLAYLHEDYPCLE		
daf-1	IGSDRVDTGFTVTEKLVIEYHPSGSLADFLLENTVNIETTYNLARSTASGLAFNQGIGSK		
subdomains	V		VI-A
cons.aa	DLK M	DFG	
HTGFBR-II	-GRPKPIVGRDLKSSNLLVNDLTCCLCDPGLSLRL---	GPYSVDDLANSQGVGTARYMAP	
BACTR-IIB	GGGKPSIAHRDFKSNVLLKSDLTAVLADFLAVRF---	EPGKPPGD--THGQVGTTRYMAP	
BACTR-II	DGHKPAISRDIKSTNVLLKQRLTACLDPLGLKFP---	BAGKSAGD--THGQVGTTRYMAP	
daf-1	-ESNKPAMVRDIKSTNMYRDLTCAIGDLGLSLSKPDAASDIIAN--	ENYKCGTVRYLAP	
subdomains	VI-B	VII	VIII

## (57) Abstract

A new receptor family has been identified, of activin-like kinases. Novel proteins have activin/TGF- $\beta$ -type I receptor functionality, and have consequential diagnostic/therapeutic utility. They may have a serine/threonine kinase domain, a DFKSRN or DLKSKN sequence in subdomain VIB and/or a GTKRYM sequence in subdomain VIII.